Radon

Questions and Answers

National Radiological Protection Board

People ask us many questions about radon. Here are answers to the most frequent ones.

Q What is radon?

A A natural radioactive gas which decays into other radioactive species, all of which cause human exposure to radiation.

Q Where does radon come from?

A From the minute amounts of uranium present in all earth materials such as rocks, soils, brick and concrete.

Q What are the effects of radon?

A Miners exposed to high radon levels have been found to run an increased risk of lung cancer. Radon in the home is also assumed to present a risk, but generally at a lower level.

Q What is the Action Level for radon?

A NRPB recommends that radon levels should be reduced in homes where the average is more than 200 Bq m^{-3} (becquerels per cubic metre). This recommendation has been endorsed by the Government.

Q What is the risk at the Action Level?

A People living all their lives in homes at the Action Level run a risk of a few per cent of developing lung cancer. On average, about one in thirty people exposed at the Action Level would be expected to develop lung cancer.

Q Does radon cause leukaemia?

A The main danger from high radon exposure is the increased risk of lung cancer. If there is any risk of leukaemia, it is, by comparison, extremely small.

Q Are children more at risk from radon than adults?

A There is no direct evidence of increased risk to children, but in estimating the risk for the population, we do assume that exposure in childhood leads to a higher risk throughout a lifetime.

Q Is only the southwest of England affected by radon?

A No. Radon is present in all parts of the UK, but in most areas the levels are quite low. Some of the highest levels have been found in the southwest, but other areas with levels well above the average have been found, as in parts of the Pennines and Scotland. Even in southwest England, most homes have low levels.

Q Is radon a problem in any other countries?

A Yes. All countries are affected to some degree by radon, but the problem is receiving particular attention in Sweden, the Nordic countries, Germany and the USA.

Q Do radon levels vary with time?

A Yes. Radon levels in homes vary during the day, from one day to the next, and from winter to summer, mainly because of temperature differences between indoors and outdoors. They are generally higher at night and during the winter.

Q Why do radon measurements take so long?

A Radon levels vary so much that it is not possible to predict with any certainty the long-term values from short-term measurements.

Q Can radon levels build up indefinitely?

A No. Although radon enters homes all the time, some is carried away by the natural ventilation. Even in a home with good draughtproofing and double glazing, the air changes several times a day.

Q Are high radon levels found only in granite areas?

A No. The highest levels have been found in some homes on or near granite in southwest England, but not all granites give high levels. Some other rocks, but not clays, also cause high radon levels.

Q Do granite walls cause high radon levels?

A The main source of radon is the ground below the home. Granite walls and fireplaces do not emit much radon.

Q Is there any danger from radon when working with granite?

A No special precautions are necessary because of radon, just the usual need to avoid too much dust.

Q Can rocks in the garden give high radon levels?

A No. Radon from rocks and soil in the open disperses rapidly in the air.

Q Is there any danger from growing fruit and vegetables in areas affected by radon?

A No. Exposure from the natural radioactivity in food is much less than from radon in the home.

Q Can radon get into water supplies?

A Yes. Most water supplies have low levels of radon, but some smaller supplies may be high. None has been found in the UK with high enough levels to cause as much concern as radon from the ground.

Q Is anything being done to prevent radon problems in new homes?

A Yes. Since July 1988, new homes in the most affected parts of Cornwall and Devon have been built according to guidelines for low radon levels.

Q I live in an area where high levels of radon have been found and I am extending my house. Is there anything I can do to prevent radon entry in the extension?

A Yes. Using the guidelines for new buildings will help to avoid the problem. Particular attention should be paid to the join between the old and new parts. Contact the building control officer for your district for further advice.

Q Can I get a grant to reduce the radon level in my home?

A If reduction is recommended after long-term radon measurements in your home, you should contact your District Council for information on grants.

Q Is there any risk from staying in a holiday home with high radon levels?

A The risk from radon is calculated for a lifetime spent in the same home; the risk from holiday periods will be very small.

Q I am going to move to an area where high radon levels occur. How do I discover if my new home has a high level?

A Even in southwest England, most homes have low levels of radon, and high levels can generally be remedied at fairly moderate cost. Concern about radon should therefore not influence your choice of home. Once you have moved, you can obtain a measurement (funded by Government Departments) from NRPB; if the level is high, you will receive advice on how to reduce it.

Q Can unoccupied homes be measured for radon?

A Yes, although the radon level may change when the home is occupied. Homes undergoing alteration cannot be measured accurately; it is best to wait until building work is complete.

Q Will increasing the ventilation in a house reduce the indoor radon concentration?

A Increasing the ventilation, especially on the ground floor, will in most cases cause a moderate reduction in the radon level. Extractor fans can sometimes aggravate radon problems, if a suitable air inlet is not provided, as they may draw soil gas into the house.

Q Do ionisers, electrostatic precipitators or air cleaners reduce the doses from radon?

A None of these devices can reduce doses from radon much. It is better to prevent radon entry rather then to try and reduce the level once it is in the house.

Q Is NRPB only doing radon surveys of homes?

A No. Radon measurements are also being made in mines, caves and other places of work.

Q How can I find out my radon exposure at work?

A You should discuss the matter with your employer and ask them to contact NRPB for advice on the need for measurements.

Q I am an employer. Do I need to measure the exposure of my employees?

A The Ionising Radiations Regulations impose a duty on employers to protect workers from exposure to radon. NRPB provides measurements for places of work and can advise whether the regulations are likely to affect you.

Q Are children exposed to radon at school?

A Radon exposures at school are generally lower than at home. Some local authorities in the most affected areas are making measurements in schools and taking action where necessary to reduce radon levels. If you are concerned, do discuss the matter with the head teacher.

Q Is there any danger from radon when visiting caves and mines?

A High levels of radon occur in some caves and mines, but a short visit will not cause much exposure.

Q Can geiger-counters detect radon?

A No. Geiger-counters are unable to detect radiation from radon and its decay products at the levels found in homes.

Q I understand that smoke detectors contain radioactivity. Does this affect radon measurements?

A No. Smoke detectors contain a small amount of radioactive material, which does not emit radon and will not affect measurements in your home.

Q Did the accident at Chernobyl have anything to do with the radon problem?

A No. Radon is entirely natural. We have always received doses of radiation from it and always will. People living in the UK received much smaller doses from Chernobyl than from radon.

Q Is radon a cover-up for nuclear power?

A No. Exposure to radon in the home is a serious matter deserving attention. Exposure to radiation from the nuclear power industry receives serious attention. NRPB is required to give impartial advice on all matters of radiation protection.

Further information

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The National Radiological Protection Board is an independent statutory body. It was set up in 1970 to provide advice on radiation standards, and to carry out research to improve protection. It also provides a number of technical services. The advice and services from NRPB are available to government, local authorities, industry, environmental groups, trade unions, etc.

NRPB is financed mainly through the Department of Health. The balance is earned by providing technical services and carrying out contract research.

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